



INSTRUCTIONS

APPLICATION AND CONNECTION DATA FOR BUCK-BOOST TRANSFORMERS

SELECTION DATA

General Electric B-B transformers are insulated units rated 120/240 volts high voltage and 12/24 and 16/32 volts low voltage. When connected as autotransformers in single-phase or three-phase circuits, they can be used to change voltage on loads greatly in excess of the rating shown on the nameplate.

Because autotransformers may transmit line disturbances directly to the load, their use in some areas may be prohibited by local codes.

NOTE

BE SURE THAT AUTOTRANSFORMERS ARE PERMISSIBLE IN YOUR LOCALE.

SINGLE-PHASE APPLICATION

STEP 1. Check the load KVA, phase, frequency, and desired voltage.

STEP 2. Check the available line voltage. (The phase and frequency must be the same for both the line and the load.)

STEP 3. Check the secondary voltage of the B-B transformer by referring to Fig. 1 or 2. (The line voltage may be either the low or the high voltage depending on whether the voltage needs to be boosted or bucked.) Choose the rating curve nearest the point where the HV and LV lines cross.

STEP 4. Check B-B transformer KVA rating by using the "X" factor from the curve selected in Step 3 times the load KVA.

STEP 5. Connect B-B transformer per diagram letter indicated on the curve selected in Step 3.

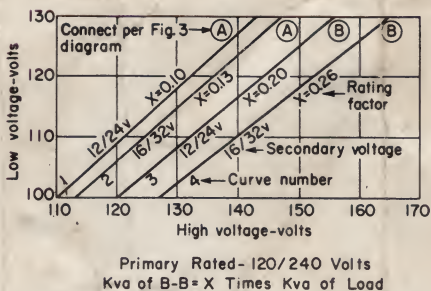


Fig. 1. Single-phase operation (100-165 volts)

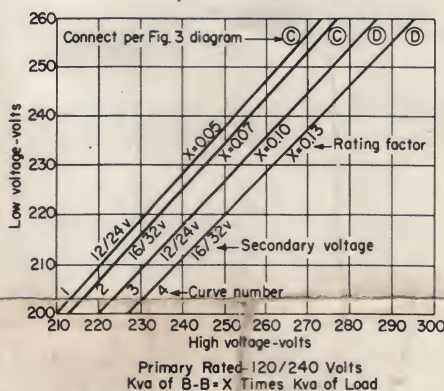


Fig. 2. Single-phase operation (200-295 volts)

Single-phase Connections

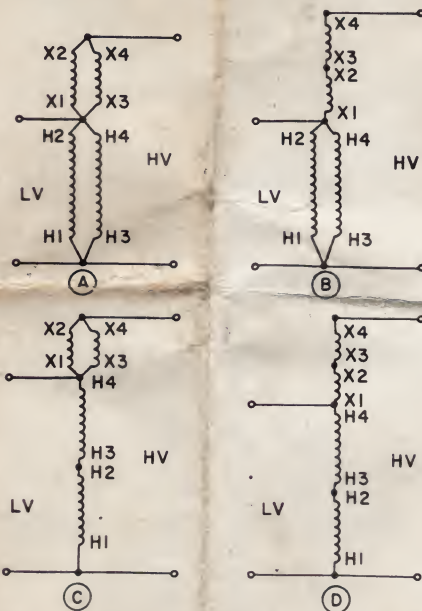


Fig. 3. Connection diagrams for single-phase application

EXAMPLE

Given:

(a) 12-KVA load, 1 phase, 60 cps, rated 230 volts

(b) Available line voltage 208 volts, 60 cps

B-B Application:

Figure 2 shows 208-volts low voltage and 230-volts high voltage. Reading across the chart from 208-volts and up from 230 volts, we find that curve No. 3 passes very close to the point where the 208-volt line crosses the 230-volt line; therefore, curve No. 3 must be used to complete our application. 115.45

From curve No. 3, we see that the B-B transformer rating is 12/24 volts, secondary. The "X" factor is 0.10 times 12 KVA load equals 1.2 KVA. The complete rating of the buck-boost transformer for this application is: 1.2 KVA, 1 phase, 60 cps, 120/240 volts (primary) and 12/24 volts (secondary). From curve No. 3 we find that connection diagram D of Fig. 3 should be used.

THREE-PHASE OPEN DELTA APPLICATION

STEP 1. Check the load KVA, phase, frequency, and desired voltage.

STEP 2. Check the available line voltage. (The phase and frequency must be the same for both the line and the load.)

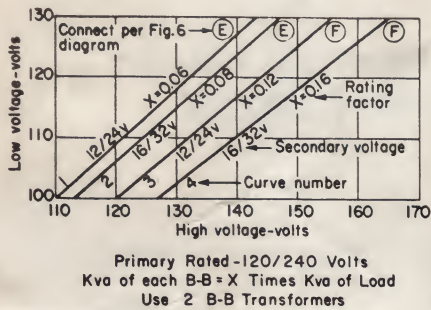


Fig. 4. Three-phase open delta operation (100-165 volts)

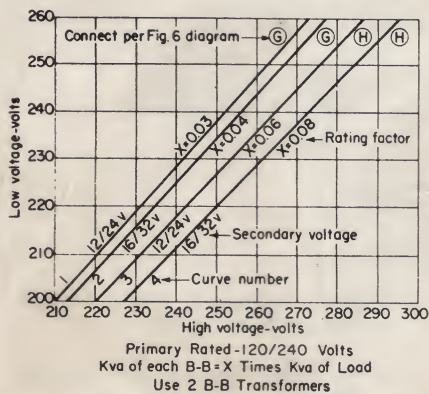


Fig. 5. Three-phase open delta operation (200-295 volts)

Three-phase Open Delta Connections

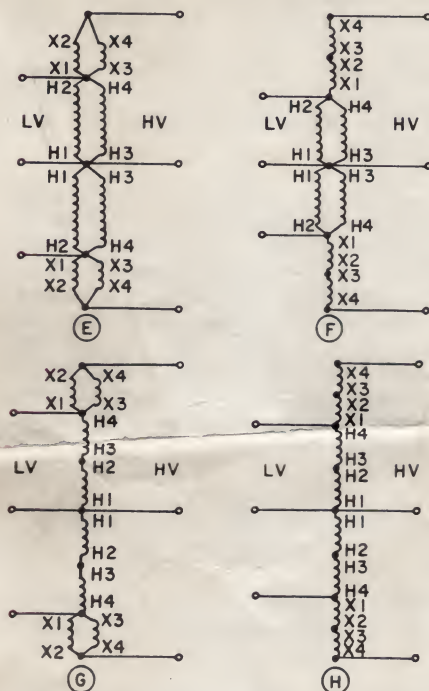


Fig. 6. Connection diagrams for three-phase open delta operation (Two single-phase B-B transformers required)

STEP 3. Check the secondary voltage of each individual B-B transformer by referring to Fig. 4 or 5.

STEP 4. Check the KVA rating of each B-B transformer by using the "X" factor from the curve selected in Step 3 times the 3-phase load KVA.

STEP 5. Connect the B-B transformers per diagram letter indicated on curve selected in Step 3. (The open delta connection does not provide a neutral and is used only on 3-phase applications where the neutral is not connected to the load.)

THREE-PHASE WYE APPLICATION

STEP 1. Check the load KVA, phase, frequency, and desired voltage.

STEP 2. Check the available line voltage. (The phase and frequency must be the same for both the line and the load.)

STEP 3. Check the secondary voltage of each individual B-B transformer by referring to Fig. 7 or 8.

STEP 4. Check the KVA rating of each B-B transformer by using the "X" factor from the curve selected in Step 3 times the 3-phase load KVA.

STEP 5. Connect the B-B transformers per diagram letter indicated on curve selected

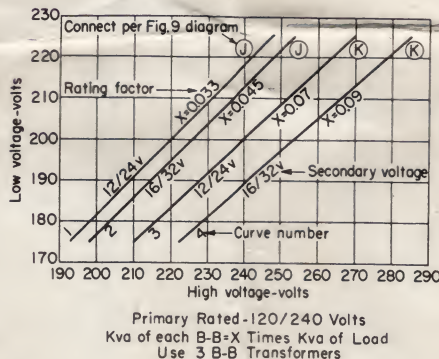


Fig. 7. Three-phase wye operation (175-285 volts)

in Step 3. (The neutral should be solidly connected to the system neutral. If this cannot be done, loading the line to the neutral must be avoided.)

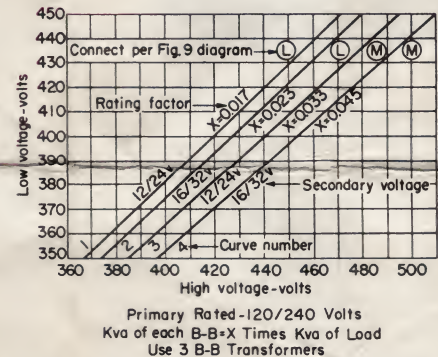


Fig. 8. Three-phase wye operation (350-510 volts)

Three-phase Wye Connections

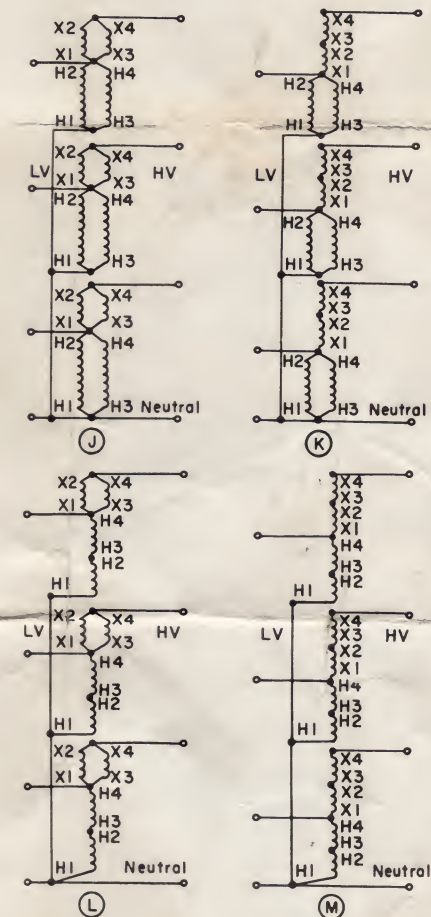


Fig. 9. Connection diagrams for three-phase wye operation (Three single-phase B-B transformers required)